Reflection:

Overall, the detail becomes much clearer, and the students are able to find the point of what they are talking about faster. The answers become more accurate, and they flow well. In the typed summaries of each example, the language is very consistent. For example in the level 2 exemplar, they continue to write “sometimes does” “pays some attention”, etc. These types of descriptors come right from the achievement charts.

Expectation:

SNC 4M, Nutritional Science D3.1

* Describe the basic chemical components of proteins, carbohydrates, fats and lipids, and vitamins and minerals, and explain their functions in the body.

Knowledge:

1. Which of carbohydrates, proteins, fats, or vitamins, are processed the fastest into usable energy?

*Level 4 response*:

Carbohydrates, as their digestion begins in the mouth and stomach. They can then be absorbed quickly by the small intestine.

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| **Criterion** | **1** | **2** | **3** | **4** |
| Knowledge of Content | Demonstrates limited knowledge | Demonstrates some knowledge | Demonstrates considerable knowledge | Demonstrates through knowledge |

Communication:

1. Explain the building pieces of a protein, and how they are broken down and used within the body.

*Level 4 response*:  
Proteins are made up of amino acids. After they enter the body, they are denatured in the stomach with help from stomach acid (HCl). Then the enzyme called pepsin breaks down the proteins into the amino acids within the stomach, and then several other enzymes assist the breakdown in the small intestine. Once broken down, the individual amino acids are taken up by the villi in the small intestine, and transported to the blood stream, where they are taken to cells that need them. Amino acids are used within the body to create new proteins, as well as repair damaged ones.

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| **Criteria** | **1** | **2** | **3** | **4** |
| Expression and organization  Use of vocabulary | Expresses and organizes with limited effectiveness  Uses vocabulary incorrectly | Expresses and organizes with some effectiveness  Uses vocabulary somewhat correctly | Expresses and organizes with considerable effectiveness  Uses vocabulary mostly correctly | Expresses and organizes with a lot of effectiveness  Uses vocabulary correctly |

Application:

1. Why are diets like the Adkins diet so effective to help people lose weight?

*Level 4 response*:

Since proteins take the most amount of energy to digest within the body, the energy required is very high. Energy can be translated into calories, so proteins take a lot of calories to digest. Proteins do not have a lot of calories to give back to the body, however. Energy from food comes from transforming the sugars in a food into ATP. Proteins do not have sugar, so the energy that you gain from them comes from the amino acids. Amino acids are not a large source of energy, therefore proteins do not give a lot of calories back to the body.

Diets like Adkins ask you to eat a lot of protein as well as fats. Fats give you a lot of energy, but are slightly harder to break down than carbohydrates. Therefore your body is spending calories on breaking down fat molecules.

Overall, diets like Adkins ask you to eat a lot of proteins because they give you energy, but also take a lot of energy to digest. Fats give you lots of energy, and take calories to digest as well. Adkins downplays carbohydrates because they are easy to breakdown (low calories cost) and give you lots of energy back. The excess energy is also easy to store, so if you don’t use it all, it returns to your body as fat.

High energy costs from proteins and fats lead to weight loss, and since proteins don’t give you back a lot of calories and you’re using all the energy from the fat to function, you’re not storing any extra. Therefore there is a net loss in calories and a net weight loss.

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| **Criterion** | **1** | **2** | **3** | **4** |
| Making connections between science and society | Makes connections with limited effectiveness | Makes connections with come effectiveness | Makes connections with considerable effectiveness | Makes connections with a lot of effectiveness |

Thinking/Inquiry

1. Create a balanced meal that you would eat. Justify your food choices, and analyse the net energy in/out for each item

*Level 4 response*:

Grilled salmon with lemon marinade, glass of skim milk, steamed asparagus, mashed sweet potatoes.

Grilled salmon – fish is low is saturated fat, but high in omega-3 polyunsatured fats, which help fuel the brain. Grilling it reduces the number of calories that would alter the nutritional information. The lemon marinade gives good flavor without adding calories. NET ENERGY – In.

Glass of skim milk – drinking skim instead of 2% milk reduces the amount of saturated fat from this meal. Milk has protein as well as some sugars for energy. NET ENERGY – In

Steamed asparagus – asparagus is dark green vegetable, which has a lot of iron, and lots of fibre, which cannot be digested, and assists with several bodily functions. Steaming the asparagus leaves the vitamins in the vegetable, without added calories. NET ENERGY – Out. Asparagus takes a lot of energy to digest but gives very few calories back.

Mashed sweet potatoes – sweet potatoes have less starch and carbohydrates than regular potatoes, but lots of flavor. They also have fibre, and lots of vitamins that are essential to the body. Boiling and then mashing the potatoes without adding extra fat is a healthier way to serve this item. NET ENGERY – In.

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| **Criterion** | **1** | **2** | **3** | **4** |
| Use of critical thinking skills and strategies | Uses limited thinking skills | Uses some thinking skills | Uses considerable thinking skills | Uses a lot of thinking skills |